Building a Stochastic Simulation Model for Blue Crab Population Evolution in Antinioti Lagoon

Authors : Nikolaos Simantiris, Markos Avlonitis

Abstract : This work builds a simulation platform, modeling the spatial diffusion of the invasive species Callinectes sapidus (blue crab) as a random walk, incorporating also generation, fatality, and fishing rates modeling the time evolution of its population. Antinioti lagoon in West Greece was used as a testbed for applying the simulation model. Field measurements from June 2020 to June 2021 on the lagoon's setting, bathymetry, and blue crab juveniles provided the initial population simulation of blue crabs, as well as biological parameters from the current literature were used to calibrate simulation parameters. The scope of this study is to render the authors able to predict the evolution of the blue crab population in confined environments of the Ionian Islands region in West Greece. The first result of the simulation experiments shows the possibility for a robust prediction for blue crab population evolution in the Antinioti lagoon.

Keywords : antinioti lagoon, blue crab, stochastic simulation, random walk

Conference Title : ICEIR 2022 : International Conference on Environmental Informatics and Research

Conference Location : Rome, Italy

Conference Dates : July 21-22, 2022